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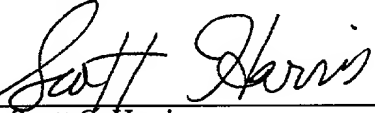
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Dated:

Respectfully submitted,

By:


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Applicant or Patentee: Scott C. Harris
Serial or Patent No.:
Filed or Issued: Herewith
For: AUTOMATIC MAIL REJECTION FEATURE

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) and 1.27(b)) - INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled described in

- ☒ the specification filed herewith.
☐ application serial no. , filed .
☐ patent no. , issued .

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Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

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☐ persons, concerns or organizations listed below*.

*NOTE: Separate verified statements are required from each named person, concern, or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

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I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status when any new rule 53 application is filed or prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Inventor: Scott C. Harris

Signature: _____

Date: 10/16/00

APPLICATION
FOR
UNITED STATES LETTERS PATENT

TITLE: AUTOMATIC MAIL REJECTION FEATURE
APPLICANT: SCOTT C. HARRIS

CERTIFICATE OF MAILING BY EXPRESS MAIL

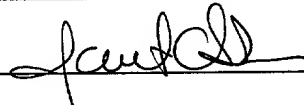
Express Mail Label No. EM 327 460 746 US

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October 16, 2000

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009707-20009960

AUTOMATIC MAIL REJECTION FEATURE

This application claims priority from provisional application no 60/203,729, filed May 12, 2000.

5

Background

This invention relates to an automatic mail rejection feature in an e-mail program.

E-mail can be an inexpensive and effective way of sending information. Because of this, a recurrent problem is "spam", or the sending of unwanted email to a certain person. Once an e-mail address gets on a spammer's list, the person can be barraged with junk email. Various attempts have been made to combat this problem.

For example, some web e-mail programs include the ability to block further mail from a specified sender. When junk mail is received from a specified address, the control is actuated. Further mail from that specified sender is then blocked, presumably automatically deleted or sent to the trash.

Certain laws also cover spamming, and require that each e-mail that is sent unsolicited have a way of unsubscribing from the list. Spammers combat both of these

measures by continually changing their name and/or changing their return address.

Some e-mail programs allow a user to manually set criteria for rejection of incoming email. For example, if an incoming e-mail is from a domain that has many known spammers, many people may simply set their program to delete it. However, this has the unintended extra effect of also removing desired email, at times.

In addition, the automatic rejection feature does nothing to resolve the traffic caused by junk e-mail.

Summary

The present application teaches an automatic system which automatically recognizes certain aspects of undesired messages such as junk email and undesired Internet content. The system automatically produces recommendations of criteria to use in automatically removing undesired information.

In an email embodiment described herein, these criteria can be automatically enforced or can be presented to the user as a table of options. In addition, the system can look for keywords in the e-mail, and can automatically postulate strategies for rules based on these keywords.

Brief Description of the Drawings

These and other aspects will be described in detail with reference to the accompanying drawings, wherein:

Figure 1 shows an email browser window;

Figure 2 shows a determined spam message, and the parsing scheme used on it;

Figure 3 shows an exemplary computer system; and

Figure 4 shows an operational flowchart.

Description of the Preferred Embodiment

A first embodiment describes an e-mail program which allows automatic rejection of unwanted messages. The embodiment runs on a computer shown in Figure 3, having a processor 300 and memory 305. A typical e-mail browser window is shown in Figure 1. The browser window includes a number of operating buttons 102, a list of return addresses, and message subject. This browser also includes and displays a measure of likelihood of spam quotient or "LOSQ". The likelihood of spam quotient is displayed in the rightmost column as a percentage. For example, a message that is known to be spam would have a likelihood of spam quotient of 100%. Other messages that are less likely to be spam may have a likelihood of spam quotient of something less than 100%.

The likelihood of spam quotient can be displayed as a number as shown in Figure 1, or alternately can be displayed by the color of the message being displayed. For example, the message can be displayed in green to indicate low likelihood of spam (e.g. less than 10%) and yellow to indicate medium likelihood of spam (e.g. between 10 and 80 percent, and in red to indicate high likelihood of spam; for example likelihood of 80 to 100 percent to be spam, for example.

One of the buttons 106 on the toolbar requests removal of the high spam likelihood messages from the inbox. This enables, in a single click, removing all high likelihood of spam messages. Another button 120 is an options button which brings up the options menu of Figure 2.

The function buttons in Figure 1 include, as conventional, a delete message button 107. An additional a "delete as spam" button 111 is also provided. Any message that is deleted as being spam is further processed to determine characteristics that can be used to process other messages. Characteristics of the deleted-as-spam message are used to update the rules database to indicate characteristics of the spamming messages.

Another button 112 is also provided indicating "delete the message; not spam". Therefore, the user is presented

with three different options: delete the message without indicating whether it is spam or not, delete the message while indicating that it is spam, or delete the message indicating that it is not spam.

5 The latter two options are used to update the rules in the rules database as described in further detail herein. Hence, this option allows adding an incoming e-mail message to the spam list, when it is determined to be likely to be spam.

10 Figure 1 also shows a number of different ways of displaying different email. The first option, labeled "show all messages", on button 104, has the function, as it suggests, of showing all messages. The messages may be further characterized based on the likelihood that they are
15 spam. As described herein, the messages are characterized by comparing them with rules. Each match with the rules may increase the score, and make it more likely that the message is spam. More about this operation is described herein.

20 Those messages which are likely not spam are shown in a neutral color such as green or black. The messages which are questionable are shown in a cautionary color, such as yellow highlight. Finally, the messages which are likely to be spam are shown in an alert color such as red.

A second display option displays only those messages which are likely to represent desired messages. Hence, only the green and yellow messages are displayed. According to one embodiment, the messages are sorted by date and time
5 received. Within each day, the messages are sorted by likelihood of being spam. The spam-likely messages, which are determined to be likely to represent spam, may be put into a separate folder; here shown as "spam-likely messages".

10 The messages which are likely to represent undesired information can be read by the user. If not read by the user, they are kept in the folder for a specified period of time e.g. thirty days, before deleting.

The incoming messages are processed based on rules.
15 For example, if one does not want to be on a mailing list about XXX type items, then messages that include the text "free xxx pictures" may be likely to be spam. However, other people may find those messages to be highly desirable. Similarly, messages about get rich quick
20 schemes may be trash to one person, treasure to another.

The present system allows customization of which emails to remove as spam, by defining rules. Each time a message is deleted as spam, a number of aspects about that message are stored. A database is used to store the

message. This database may include relative weighting of different aspects. Figure 2 shows a determined spam message, and the parsing scheme.

The sender of the message is often a highly determinative factor. For example, if a specific sender sends one spam message, the same sender is very likely to be sending another spam message later on. Therefore, a first item in the database is the "received from" field 202. In addition to the specific sender, however, the domain of the sender often gives information. This domain is reviewed at 204. If the domain is a common domain such as Yahoo.com or Hotmail.com, then the relevance of the sender's domain may not be probative. If, however, the domain name is uncommon, such getrichquick.com or the like, then it is more likely that other message from that domain would be spam. Further, many messages from a common domain may itself be probative. The domain information is weighted accordingly.

The domain name from an item is added to the rules database from field 204. Another field 206 stores an indication of whether the domain is a common domain or an uncommon/ specific domain. This determination is initially zero, and is changed depending on the number of hits of domains that become present in the database. For example,

when two different addresses from the same domain become spam, then the value becomes presumptly H (likely to be spam). When two different addresses from the same domain are received, one spam, the other not, then the value
5 presumptively becomes L.

Each sentence and field in the e-mail, including subject; text of the body; links in the email, and any others is then stored as a separate field.

Analogous information may also be categorized from
10 emails that are deleted as "not spam". This provides a database of characteristics that are likely to represent spam messages, and other characteristics that are less likely to represent spam messages. Matching with the databases changes the scoring of the message accordingly.

15 Once the database becomes sufficiently large, it may become time-consuming to compare incoming messages with the database. Indexing approaches can be used to increase the speed of the comparison. The detailed comparison may also be done in the background; the message may be displayed,
20 and its classification displayed only some time later.

Figure 4 shows incoming messages received at 400 being broken down into analogous parts to those parts that are cataloged in the database 410. Each part in the incoming e-mail is compared with each part in the database. A

simplified index can be prepared, such as the type used for internet searching, in order to speed up the searching.

Each match changes the scoring of the email, to make it more likely to be spam, or less likely to be spam at 415.

- 5 Each field match has a specified score increase. For example, match from the addressee is a very powerful indication of spam, and may by itself carry a score of 75. 100% matching of a sentence may carry a score of 10. A 50% word match may carry a score of 3. Match of the hyperlinks
10 in an e-mail to those in a previously spammed determined e-mail may carry a score of 5.

Similarly, the e-mail and its fields can be compared with non-spam indicative email. An e-mail which is not spam can carry negative scores, for example. Finding the
15 e-mail address to be on the non-spam list, for example, can carry a score of negative 100, or can immediately abort the process with an indication of non-spam.

If a message has few matches to the database, it may be characterized as unknown or cautionary (yellow).

- 20 Similarly, mixed signals (some matches to spam and non-spam database), may result in an unknown result.

The total score for an e-mail is assessed, and this total score is used to assess if the e-mail is spam or not.

What is claimed is:

1 1. A method, comprising:
2 receiving an electronic mail message;
3 displaying information about the electronic mail
4 message in a way that allows at least one of deleting the
5 message without indicating whether it is spam or not,
6 deleting the message while indicating that it is spam, or
7 deleting the message while indicating that it is not spam.

1 2. A method as in claim 1 further comprising storing
2 a database of spam likelihood, and wherein said deleting
3 while indicating updates information in the database.

1 3. A method as in claim 1 wherein said deleting
2 while indicating updates rules in a rules database.

1 4. A method as in claim 3 wherein said rules include
2 information about fields from said electronic mail message.

1 5. A method as in claim 3 wherein said fields
2 include at least a sender of the e-mail message, text of
3 the e-mail message, and a subject of the e-mail message.

1 6. A method as in claim 5 wherein said fields also
2 include a domain of a sender of the e-mail message.

1 7. A method as in claim 3, wherein said fields
2 include links within the e-mail message.

1 8. A method of determining whether an e-mail
2 represents unwanted information, comprising:
3 forming rules indicative of contents of the e-mail,
4 said rules including at least information about a sender of
5 the e-mail message and information about at least one
6 other field within the e-mail message other than said
7 sender or a recipient of the e-mail message.

1 9. A method as in claim 8 wherein said at least one
2 other field comprises information in text of the e-mail
3 message.

10. A method to as in claim 8, wherein said at least one other field comprises information within a subject of the e-mail message.

11. A method as in claim 8 wherein said at least one other field comprises information about links of said e-mail message.

12. A method as in claim 8, further comprising comparing an incoming message to said rules and determining a likelihood that the incoming message is unwanted based on said comparing.

13. A method as in claim 12 wherein said comparing comprises comparing each of a plurality of fields with rules indicative of said fields and determining a likelihood that the message is unwanted based on said comparing.

14. An e-mail program, comprising:
a display portion which is displays a plurality of e-mails;
a plurality of controls including at least a first control which selects deleting an e-mail while indicating

6 that said e-mail is spam, and a second control which
7 selects deleting an e-mail while indicating that said e-
8 mail is not spam.

1 15. A program as in claim 14, further comprising
2 displaying a likelihood of spam coefficient which
3 indicates, on a weighted scale, a likelihood that the
4 associated message represents spam.

1 16. A program as in claim 14, further comprising
2 displaying a control which allows deleting an e-mail
3 without indicating or not indicating whether said e-mail
4 represents spam.

1 17. A method, comprising:
2 obtaining a message;
3 monitoring a user's actions with respect to said
4 message, and automatically forming rules indicating the
5 desirability of said message; and
6 using said rules to assess desirability of other
7 messages.

1 18. A method as in claim 17, wherein said messages
2 are electronic mail messages.

1 19. A method as in claim 17 wherein said user's
2 actions include a specific way that the user deletes said
3 message.

1 20. A method as in claim 17 wherein said desirability
2 comprises whether said message is a spam e-mail message.

1 21. A method, comprising:
2 determining a plurality of characteristics of an
3 unwanted message;
4 forming a list with said plurality of characteristics;
5 forming a score of an incoming message by comparing
6 said incoming message with said list and determining
7 commonalities between said incoming message and said list;
8 defining said message as likely being unwanted if said
9 score is within a predetermined range; and
10 taking an action to restrict said message based on
11 said defining.

1 22. A method as in claim 21, further comprising
2 assessing a common-ness of a domain a sender of a message,
3 and using said common-ness of said domain.

The diagram illustrates a mobile phone interface with a menu bar at the top and a message list below it.

Menu Bar:

- Buttons: SHOW ALL, REMOVE SPAM, DELETE MESSAGE, DELETE AS SPAM, DELETE NOT SPAM.
- Labels above buttons: 104, 106, 107, 111, 112.
- Overall label: 102.

Message List:

Follow	LOSQ	subject	Return Add	Size	Date
SPAM- LIKELY	10	meeting	Ehow@com0.com	17K	0-0-00
	95	get rich	me@xxx.com	9K	0-0-00

Labels for the message list: 120, 108, 105, 110, 100.

$$F/G \cong 1$$

202	FIELD	VALUE	WEIGHTING	RESULT #
203	RECEIVED FROM	JERK@ME.COM	75	
204	DOMAIN	ME.COM	206 U/10	
205	SUBJECT	UNIVERSITY DIPLOMAS		N
206	TEXT	GETRICH QUICK		S
207	LINKS			

FIG 2

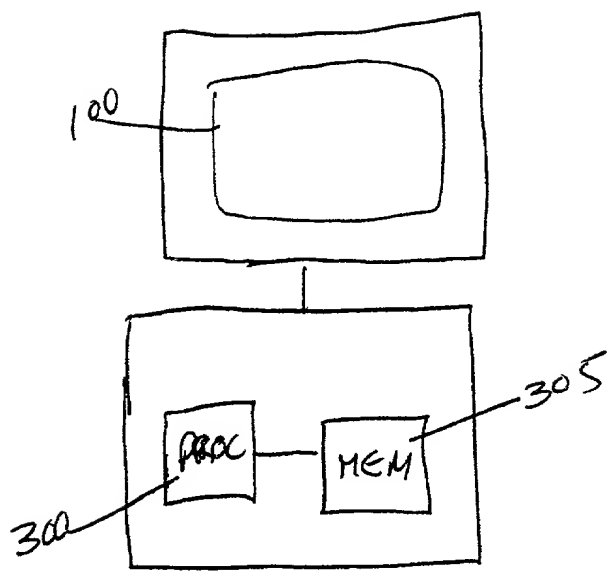


FIG 3

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled AUTOMATIC MAIL REJECTION FEATURE, the specification of which:

☒ is attached hereto.

☐ was filed on _____ as Application Serial No. _____ and was amended on _____.

☐ was described and claimed in PCT International Application No. _____ filed on _____ and as amended under PCT Article 19 on _____.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim the benefit under Title 35, United States Code, §119(e)(1) of any United States provisional application(s) listed below:

U.S. Serial No.	Filing Date	Status
60/203,729	May 12, 2000	Pending

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information I know to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

U.S. Serial No.	Filing Date	Status
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I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

Country	Application No.	Filing Date	Priority Claimed
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No

009707-2005550

Page 2 of 2 Pages

Address all correspondence to SCOTT C. HARRIS at:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Inventor's Signature:

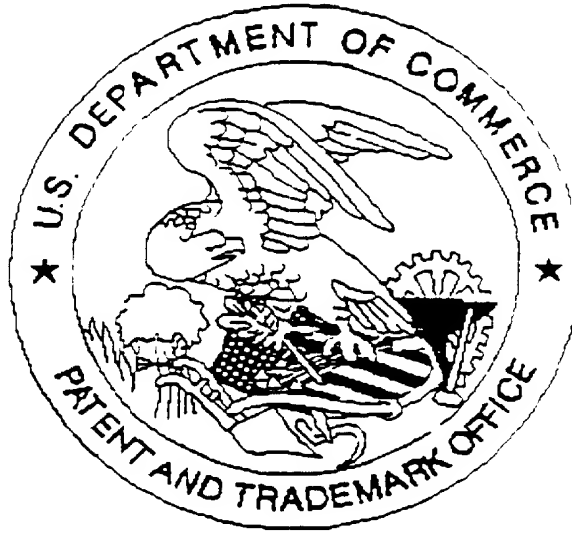
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Enclosed are 4 drawings.

☐ Scanned copy is best available.